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ABSTRACT

A method for college planning using alternative futures scenarios is explained, and a case study is used to illustrate its use in institutional research. The alternative futures approach addresses the uncertainty associated with strategic decision making. It differs from the traditional long-range planning models based on a single set of environmental assumptions about the future by recognizing that the future is subject to modification by a wide range of possible events with some probability of occurrence. In the model, the issues or concerns that may require attention are identified through environmental scanning, and defined in terms of trends or events. Univariate forecasts of trends and events are generated and interrelated through cross-impact analysis. The most likely future is written in scenario format, and alternative scenarios are generated by computer from the cross-impact matrix. In turn, these scenarios stimulate development of appropriate policies, which are analyzed for their robustness across scenarios. The purpose of the exercise is to produce a final list of policies that effectively address the issues and concerns initially identified. These policies are then implemented in action plans. The case study concerns planning for an affirmative action program. Contains 190 references. (MSE)

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THE ALTERNATIVE FUTURES APPROACH TO PLANNING: IMPLICATIONS FOR INSTITUTIONAL RESEARCH OFFICES

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THE ALTERNATIVE FUTURES APPROACH TO PLANNING: IMPLICATIONS FOR INSTITUTIONAL RESEARCH OFFICES

The external environment of higher education is characterized by change and turbulence. College and university administrators in all Western countries have witnessed major shifts in the demographics of their institutions' clientele. External agencies have tightened their control of policymaking and fiscal decisions made by the institutions; there has been growing criticism of the value of the curriculum offered and the quality of instruction. The role of education has taken on new importance in the increasingly competitive environment of the global economy. Less obvious, but no less significant, there has been a pervasive spread of electronic technologies throughout society, challenging the dominant instructional and managerial paradigm found in the majority of colleges and universities, and creating both vulnerabilities and opportunities for all institutions of higher learning.

This phenomenon has led to a recognition among administrators and organizational theorists of the need for a comprehensive approach to institutional research and planning that emphasizes sensitivity to the effects of environmental shifts on the strategic position of the institution (Ellison, 1977; Cope, 1988). An analysis of the organization's environment is critical in accurately assessing the opportunities and threats and in developing the strategic policies necessary to adapt to both internal and external environments.

The first objective of this paper is to describe the alternative futures model, a planning model that institutional leaders can employ in dealing with the level of uncertainty associated with strategic decision-making. This model varies from traditional long-range planning models based upon a single set of environmental assumptions about the future in recognizing that although the future is a continuation of existing trends, it is subject to modification by events that have some probability of occurrence. Indeed, environmental uncertainty is caused by potential events. We cannot predict the future, because uncertainty is a product of our incomplete understanding of trends, potential events and their interrelationships. The alternative futures approach enables us, however, to use the best available information we have to anticipate plausible alternative futures and, thereby, expand our vision to stimulate creative strategic planning.

The second objective of this paper is to demonstrate the application of the alternative futures model in a detailed case study that illustrates the data collection and analyses requirements for an office of institutional research. The conclusion will discuss the implications of the alternative futures approach for offices of institutional research.

The Alternative Futures Planning Model

The alternative futures planning model is based upon a number of assumptions, among them the following (Boucher and Morrison, 1989):

- The future cannot be predicted, but it can be forecasted probabilistically, taking explicit account of uncertainty.

- Forecasts must sweep widely across possible future developments in such areas as demography, values and lifestyles, technology, economics, law and regulation, and institutional change.

- Alternative futures including the "most likely" future are defined primarily by human judgment, creativity, and imagination.

- The aim of defining alternative futures is to try to determine how to create a better future than the one that would materialize if we merely kept doing essentially what is presently being done.

The alternative futures model is shown in Figure 1. Basically, the model states that from our experiences or through environmental scanning we can identify *issues* or *concerns* that may require attention. These issues/concerns are then defined in terms of their component parts—*trends* and *events*. Univariate *forecasts* of trends and events are generated and subsequently interrelated through *cross-impact analysis*. The "most likely" future is written in a scenario format from the univariate trend and event forecasts; outlines of alternative scenarios to that future are generated by computer simulations from the cross-impact matrix. In turn, these *scenarios* stimulate the development of policies appropriate for each scenario. These policies are *analyzed* for their robustness across scenarios. The purpose of the entire exercise is to derive a final list of *policies* that effectively address the issues and concerns identified in the initial stage of the process. These policies are then implemented in *action plans*.

Issue Identification

A wide range of literature provides insights into how issues are recognized by decisionmakers. Included is literature related to problem sensing and formulation (Kiesler and Sproull, 1982; Lyles and Mitroff, 1980; Pounds, 1969),

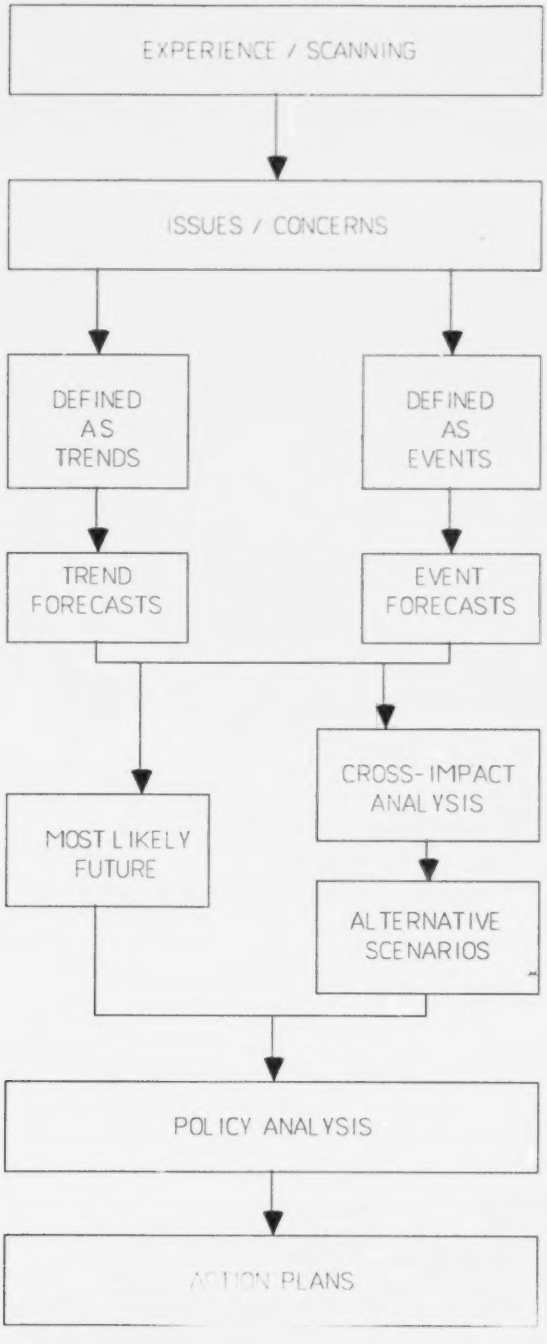

FIGURE 1. Alternative Futures Planning Model

(Note: Modified from Boucher and Morrison, 1989)

normative strategy development (Nutt, 1979), decision-making (Alexis and Wilson, 1967; Mintzberg, Raisinghani, and Theoret, 1976; Segev, 1976), and environmental scanning (Aguilar, 1967; Kefalas and Schoderbeck, 1973; King, 1982). Regardless of how issues are identified, there is agreement that inconsistencies perceived within the environment stimulate the decision-maker to further examine the issue (Dutton and Duncan, 1987).

The articulation of issues/concerns is particularly critical for effective strategic planning. A central tenet of strategic management pervading both the literature of organizational theory (Lawrence and Lorsch, 1967) and traditional business policy (Andrews, 1971) is that the proper match between an organization's external conditions and its internal capabilities is critical to its performance. Accordingly, the primary responsibility of the organizational strategist is to find and create an alignment between the threats and opportunities inherent in the environment and the strengths and weaknesses unique to the organization (Thompson, 1967).

A number of writers have recognized that the strategist's perceptions of the environment and the uncertainty it represents to the organization are key to the strategy-making process (Aguilar, 1967; Anderson and Paine, 1975; Bourgeois, 1980; Hambrick, 1982). Hatten and Schendel (1975) and Snow (1976) further suggest that the effectiveness of the strategy an organization pursues is dependent upon the strategist's ability to identify and evaluate major discontinuities in the environment. This ability is dependent upon the experience the strategist brings to this task as well as his or her ability to systematically scan the contemporary external environment.

Scanning

A major tool to identify discontinuities in the external environment is environmental scanning. Aguilar (1967) defined environmental scanning as the systematic collection of external information in order to lessen the randomness of information flowing into the organization. According to Jain (1984), most environmental scanning systems fall into one of four stages: primitive, *ad hoc*, reactive, and proactive. In the primitive stage, the environment is taken as unalterable. There is no attempt to distinguish between strategic and nonstrategic information; scanning is passive and informal. In the *ad hoc* stage, areas are identified for careful observation, and there are attempts to obtain information about these areas (e.g., through electronic data base searches), but

no formal system to obtain this information is instituted. In the *reactive* stage, efforts are made to continuously monitor the environment for information about specific areas. Again, a formal scanning system is not utilized, but an attempt is made to store, analyze, and comprehend the material. In the *proactive* stage, a formal search replaces the informal searches characteristic of the earlier stages. Moreover, a significant effort is made to incorporate resulting information into the strategic planning process.

Aguilar suggests that environmental assessment is more effective where a formal search replaces the informal search of the environment. The formal search uses information sources covering all sectors of the external environment (social, technological, economic and political) from the task environment to the global environment. A comprehensive system includes specifying particular information resources (e.g., print, TV, radio, conferences) to be systematically reviewed for impending discontinuities. Examples of such systems are found mainly in the corporate world (e.g., United Airlines, General Motors); less comprehensive systems are now appearing in colleges and universities (Hearn and Heydinger, 1985; Morrison, 1987), although recent literature advocates establishing formal environmental scanning systems to alert administrators to emerging issues (Cope, 1988; Keller, 1983; Morrison, 1987).

Structuring Issues

Issues may be *structured* by identifying their parts as trends or events. *Trends* are a series of social, technological, economic, or political characteristics that can be estimated and/or measured over time. They are statements of the general direction of change, usually gradual and long-term, and reflect the forces shaping the region, nation, or society in general. This information may be subjective or objective. For example, a subjective trend is the level of support for a public college by the voters in the state; an objective trend would be the amount of funding provided to all public institutions in the state. An *event* is a discrete, confirmable occurrence that makes the future different from the past. An example would be: "Congress mandates a period of national service for all 17-20 year olds."

Structuring the issues involved in the planning problem includes developing a set of trends that measure change in individual categories, along with a set of possible future events that, if they were to occur, might have a significant effect on the trends, or on other events. The trend and event set is chosen to reflect the complexity and multidimensionality of the category. Ordinarily, this means that the trends and events will describe a wide variety of social, technological, economic, and political factors in the regional, national and global environment.

Forecasting

Having defined the trend and event sets, the next step is to forecast subjectively the items in each of these sets over the period of strategic interest (e.g., the next 15 years). For trends, the likely level over this period is projected. This is an *exploratory forecast*. It defines our expectation, not our preference. (*Normative forecasts* define the future as we would like it to be with the focus on developing plans and policies to attain that future.) Similarly, the cumulative probability of each event over the period of interest is estimated, again on the same assumption.

It is important to distinguish between the terms "prediction" and "forecast." Science depends upon theoretical explanation from which predictions can be made. With respect to the future, a prediction is an assertion about how some element of "the" future will materialize. In contrast, a forecast is a probabilistic statement about some element of a possible future. The underlying form of a forecast statement is, "If A occurs, plus some allowance for unknown or unknowable factors, then maybe we can expect B or something very much like B to occur, or at least B will become more or less probable."

It is also important to distinguish the criteria for judging predictions and forecasts. Predictions are judged on the basis of their accuracy. Forecasts are judged, according to Boucher (1984, as reported in Boucher and Morrison, in press), on the following criteria:

1. *Clarity*. Are the object of the forecast and the forecast itself intelligible? Is the forecast clear enough for practical purposes? Users may, for example, be incapable of rigorously defining "GNP" or "the strategic nuclear balance," but they may still have a very good ability to deal with forecasts of these subjects. On the other hand, they may not have the least familiarity with the difference between households and families, and thus be puzzled by forecasts in this area. Do users understand how to interpret the statistics used in forecasting (i.e., medians, interquartile ranges, etc.)?

2. *Intrinsic credibility*. To what extent do the results make sense to planners? Do the results have face validity?

3. *Plausibility*. To what extent are the results consistent with what the user knows about the world outside of the scenario and how this world really works or may work in the future?

4. *Policy relevance*. If the forecasts are believed to be plausible, to what extent will they affect the successful achievement of the user's mission or assignment?

5. *Urgency.* To what extent do the forecasts indicate that, if action is required, time must be spent quickly to develop and implement the necessary changes?

6. *Comparative advantage.* To what extent do the results provide a better foundation now for investigating policy options than other sources available to the user today ? To what extent do they provide a better foundation now for future efforts in forecasting and policy planning?

7. *Technical quality.* Was the process that produced the forecasts technically sound? To what extent are the basic forecasts mutually consistent?

These criteria should be viewed as filters. To reject a forecast requires making an argument that shows that the item(s) in question cannot pass through all or most of these filters. A "good" forecast is one that survives such an assault; a "bad" forecast is one that does not (Boucher and Neufeld, 1981).

Boucher and Neufeld stress that it is important to communicate to decisionmakers that forecasts are transitory and need constant adjustment if they are to be helpful in guiding thought and action. It is not uncommon for forecasts to be criticized by decisionmakers. Common criticisms are: that the forecast is obvious; it states nothing new; it is too optimistic, pessimistic, or naive; it is not credible because obvious trends, events, causes, or consequences were overlooked. Such objections, far from undercutting the results, facilitate thinking strategically. The response to these objections is simple: If something important is missing, add it. If something unimportant is included, strike it. If something important is included but the forecast seems obvious, or the forecast seems highly counterintuitive, probe the underlying logic. If the results survive, use them. If not, reject or revise them (Boucher and Morrison, in press).

A major objective of forecasting is to define *alternative* futures, not just the "most likely" future. The development of alternative futures is central to effective strategic decision-making (Coates, 1985). Since there is no single predictable future, organizational strategists need to formulate strategy within the context of alternative futures (Heydinger and Zenter, 1983; Linneman and Klein, 1979). To this end, it is necessary to develop a model that will make it possible to show systematically the interrelationships of the individually forecasted trends and events.

Cross-Impact Analysis

This model is a *cross-impact model.* The essential idea behind a cross-impact model is to define explicitly and completely the pairwise causal connections within a set of forecasted developments. In general, this process involves asking how the prior occurrence of a particular event might affect other events or trends in the set. When these relationships have been specified, it becomes possible to let events "happen"—either randomly, in accordance with their estimated probability, or in some prearranged way—and then trace out a new, distinct, plausible and internally consistent set of forecasts. This new set represents an alternative to the comparable forecasts in the "most likely" future (i.e., the "expected" future). Many such alternatives can be created. Indeed, if the model is computer-based, the number will be virtually unlimited, given even a small base of trends and events and a short time horizon (e.g., the next ten years).

The first published reference to cross-impact analysis occurred in the late 1960s (Gordon, 1968), but the original idea for the technique dates back to 1966, when the coinventors, T. J. Gordon and Olaf Helmer, were developing the game FUTURES for the Kaiser Aluminum Company. In the first serious exploration of this new analytic approach, the thought was to investigate systematically the "cross correlations" among possible future events (and only future events) to determine, among other things, if improved probability estimates of these events could be obtained by playing out the cross-impact relationships and, more important, if it was possible to model the event-to-event interactions in a way that was useful for purposes of policy analysis (Gordon and Haywood, 1968). The first of these objectives was soon shown to be illusory, but the second was not, and the development of improved approaches of event-to-event cross-impact analysis proceeded (Gordon, Rochberg and Enzer, 1970), with most of the major technical problems being solved by the early 1970s (Enzer, Boucher, and Lazar, 1971).

The next major step in the evolution of cross-impact analysis was to model the interaction of future events and trends. This refinement, first proposed by T. J. Gordon, was implemented in 1971-1972 by Gordon and colleagues at The Futures Group and was called *trend impact analysis*, or TIA (Gordon, 1977). Similar work was under way elsewhere (Helmer, 1972; Boucher, 1976), but TIA became well established, and it is still in use, despite certain obvious limitations, particularly its failure to include event-to-event interactions.

Two strands of further research then developed independently and more-or-less parallel with the later stages, in the creation of TIA. Each was aimed primarily at enabling cross-impact analysis to handle both event-to-event and event-to-trend interactions and to link such a cross-impact modeling capability to more conventional system models,

so that developments in the latter could be made responsive to various sequences and combinations of developments in the cross-impact model. One strand led to the joining of cross-impact analysis with a system dynamics model similar to the one pioneered by Jay Forrester and made famous in the first Club of Rome study (Meadows et al., 1972). This line of research—again directed by T. J. Gordon—produced a type of cross-impact model known as *probabilistic system dynamics*, or PSD.

The second strand led to a cross-impact model known as INTERAX (Enzer, 1979), in which the run of a particular path can be interrupted at fixed intervals to allow the user to examine the developments that have already occurred. The user can also examine the likely course of developments over the next interval and can intervene with particular policy actions before the run is resumed. Since the development of INTERAX, which requires the use of a mainframe computer, some work has been done to make cross-impact analysis available on a microcomputer. The Institute for Future Systems Research (Greenwood, SC) has developed a simple cross-impact model (Policy Analysis Simulation System—PASS) for the Apple II computer and an expanded version for the IBM AT. A comprehensive cross-impact model (*Bravo!*) will be released in mid-fall 1989 by the Bravo! Corporation, West Hartford, CT, for an IBM AT (Morrison, 1988, July-August). These microcomputer-based models greatly enhance the ability to conduct cross-impact analyses and, therefore, to write alternative scenarios much more systematically.

Alternative Scenarios

Scenarios are narrative descriptions of possible futures. A single scenario represents a history of the future. The "most likely" future, for example, contains all of the forecasts from the forecasting activity in a narrative weaving them together from some point in the future, describing the history of how they unfolded. Alternatives to this future are based upon the occurrence or nonoccurrence of particular events in the event set. Such alternatives define unique mixes of future environmental forces that may impact on a college or university. The range of uncertainty inherent in the different scenarios (which are, themselves, forecasts) changes the assumption that the future will be an extrapolation from the past (Zentner, 1975; Mandel, 1983). Within the context of an alternative future depicted by a scenario, the decisionmaker can identify causal relationships between environmental forces, the probable impacts of these forces on the organization, the key decision points for possible intervention, and the foundations of appropriate strategies (Kahn and Wiener, 1967; Sage and Chobot, 1974; Martino, 1983; Wilson, 1978). By providing a realistic range of possibilities, the set of alternative scenarios facilitates the identification of common features likely to have an impact on the organization no matter which alternative occurs. It is conventional to create from three to five such histories to cover the range of uncertainty.

Numerous approaches can be taken in writing the scenarios, ranging from a single person's writing a description of a future situation (Martino, 1983) to the use of an interactive computer model that uses cross-impact analysis to generate outlines of the alternatives (Enzer, 1980a,b; Mecca and Adams, 1985; Goldfarb and Huss, 1988). A broader range of scenario writing approaches is described by Mitchell, Tydeman, and Georgiades (1979), Becker (1983), and Boucher (1985).

Any of a number of scenario taxonomies, each with its own benefits and limitations, may be used to guide the development of a scenario logic (Bright, 1978; Ducot and Lubben, 1980; Hirschorn, 1980; Boucher, 1985). The most comprehensive of the taxonomies, however, is that of Boucher (1985), updated in Boucher and Morrison (1989). In this taxonomy there are four distinct types of scenarios: the demonstration scenario, the driving-force scenario, the system change scenario, and the slice-of-time scenario. The first three types are characteristic of "path-through-time" narratives; the fourth is a "slice of time" narrative. The following descriptions are derived from Boucher (1985) as updated in Boucher and Morrison (1989).

The *demonstration scenario* was pioneered by Herman Kahn, Harvey De Weerd, and others at RAND in the early days of systems analysis. In this type of scenario, the writer first imagines a particular end-state in the future and then describes a distinct and plausible path of events that could lead to that end-state. In the *branch-point* version of this type of scenario, attention is called to decisive events along the path (i.e., events that represent points at which crucial choices were made—or not—thus determining the outcome). Thus the branch points, rather than the final outcome, become the object of policy attention. As Kahn and Wiener (1967) point out, they answer two kinds of questions: (a) how might some hypothetical situation come about, step by step? and (b) what alternatives exist at each step for preventing, diverting, or facilitating the process?

The major weakness of the demonstration scenario, as Boucher (1985) points out, is that it is based upon "genius" forecasting and is, therefore, dependent upon the idiosyncrasies and experiences of individuals. However, this type of scenario (like all methods and techniques in this field) is useful in both stimulating and disciplining the imagination.

The *driving-force scenario*, perhaps the most popular type of scenario in governmental and business planning (Goldfarb and Huss, 1988; Ashley and Hall, 1985; Mandel, 1983), is exemplified by Hawken, Oglivy, and Schwartz's *Seven Tomorrows* (1982). Here the writer first devises a "scenario space" by identifying a set of key trends, specifying at least two distinctly different levels of each trend, and developing a matrix that interrelates each trend at each level with each other. For example, two driving forces are GNP growth and population growth. If each is set to "high," "medium," and "low," there are nine possible combinations, each of which defines the scenario space defining the context of a possible future. The writer's task is to describe each of these futures, assuming that the driving force trends remain constant.

The purpose of the driving force scenario is to clarify the nature of the future by contrasting alternative futures with others in the same scenario space. It may well be that certain policies would fare equally well in most of the futures, or that certain futures may pose problems for the institution. In the latter case, decisionmakers will know where to direct their monitoring and scanning efforts.

The major weakness of the driving-force scenario is the assumption that the trend levels, once specified, are fixed—an assumption that suffers the same criticism directed to planning assumptions in traditional long-range planning activities (i.e., they ignore potential events that, if they occurred, would affect trend levels). The advantage of this type of scenario, however, is that when well executed, the analysis of strategic choice is simplified—a function of considerable value at the beginning of an environmental or policy analysis when the search for key variables is most perplexing.

The *system-change scenario* is designed to explore systematically, comprehensively, and consistently the interrelationships and implications of a set of trend and event forecasts. This set, which may be developed through scanning, genius forecasting, or a Delphi, embraces the full range of concerns in the social, technological, economic and political environments. Thus, this scenario type varies both from the demonstration scenario (which leads to a single outcome and ignores most or all of the other developments contemporaneous with it) and from the driving-force scenario (which takes account of a full range of future developments but assumes that the driving trends are unchanging), in that there is no single event that caps the scenario, and there are no *a priori* driving forces.

The system-change scenario depends upon cross-impact analysis to develop the outline of alternative futures. The writer must still use a good deal of creativity to make each alternative intriguing by highlighting key branch points and elaborating on critical causal relationships. However, this scenario suffers from the same criticisms that may be leveled at driving-force and demonstration scenarios: although everything that matters is explicitly stated, all of the input data and relationships are judgmental. Moreover, the scenario space of each trend projection is defined by upper and lower envelopes as a consequence of the cross-impacts of events from the various scenarios that are run. Although it is valuable to know these envelopes, this information by itself provides no guidance in deciding which of the many alternative futures that can be generated should serve as the basis for writing scenarios. This choice must be made using such criteria as "interest," "plausibility," or "relevance."

The *slice-of-time scenario* jumps to a future period in which a set of conditions comes to fruition, and then describes how stakeholders think, feel, and behave in that environment (e.g., *1984*, *Brave New World*). The objective is to summarize a perception about the future or to show that the future may be more (or less) desirable, fearful, or attainable than is now generally thought. If the time period within the "slice of time" is wide, say from today to the year 2000, it is possible to identify the macro-trends over this period (e.g., Naisbitt's *Megatrends*, 1982). In this sense, a slice-of-time scenario is the same as the "environmental assumptions" found in many college and university plans. The weakness of this approach is that there is no explanation as to the influences on the direction of these trends, no plausible description of how (and why) they change over time.

Variations in these types of scenarios occur according to the perspective brought to the task by scenario writers. Boucher (1985) points out that writers using the *exploratory* perspective adopt a neutral stance toward the future, appearing to be objective, scientific, impartial. The approach is to have the scenario begin in the present and unfold from there to the end of the period of interest. The reader "discovers" the future as it materializes. The most common version of this mode, "surprise-free," describes the effects of new events and policies, although only likely events and policies are used. A second version, the "play-out" version, assumes that only current forces and policy choices are allowed to be felt in the future (i.e., no technological discoveries or revolutions are permitted).

Writers using the *normative* perspective focus on the question, "What kind of future might we have?" They respond to this question from a value-laden perspective, describing a "favored and attainable" end-state (a financially stable college and the sequence of events that show how this could be achieved) or a "feared but possible" end-state (merger with another institution).

In the *hypothetical* or *what-if?* mode, writers experiment with the probabilities of event forecasts to "see what might happen." In this mode, the writer explores the sensitivity of earlier results to changes in particular assumptions. Many "worst case" and "best case" scenarios are of this sort.

Boucher (1985) maintains that all scenarios may be placed in a particular type/mode combination. The current business-planning environment, for example, with its emphases on multiple-scenario analysis (Heydinger and Zenter, 1983), places a "most likely" future (exploratory, driving-force) surrounded by a "worst case" (normative—feared but possible, driving-force) and a "best case" (normative—desired and attainable, driving-force) scenario. Unfortunately, such a strategy ignores potentially important alternative futures from such type/mode combinations as the exploratory system change or exploratory driving-force scenarios. The choice of which scenario to write must be made carefully.

Policy Analysis

Policy analysis is initiated when the scenarios are completed. Since a scenario represents a type of forecast, it is evaluated by the same criteria described earlier (i.e., clarity, intrinsic credibility, plausibility, policy relevance, urgency, comparative advantage, and technical quality). Once these criteria are satisfied, each scenario is reviewed for explicit or implied threats and opportunities, the objective being to derive policy options that might be taken to avoid the one and capture the other. It is here that the value of this approach may be judged, for the exercise should result in policies that could not have been developed without having gone through the process.

Action Plans

Action plans are directly derived from the policy options developed through reformulating each option as a specific institutional objective. Responsibilities for developing detailed action plans and recommendations for implementation may be assigned members of the planning team. Typically, these staff members have knowledge, expertise, and functional responsibilities in the area related to and/or affected by the implementation of the strategic option. The resulting action plans are incorporated into the institution's annual operational plan as institutional objectives assigned to appropriate functional units with projected completion dates (Morrison and Mecca, 1988).

A Case Study

To illustrate the data collection and analysis requirements entailed by this approach to planning, I will describe how the office of institutional research (OIR) at an institution that will be called Southwest State University (SWSU) assisted campus decision-makers in planning for the affirmative action program. First, some background.

Background

SWSU is located in the heart of a large metropolitan city in the Southwest called Metrocity. The city serves as a hub of business activity in the state as well as the capital city. Located less than 200 miles from the Mexican border, Metrocity has a large Hispanic population, a population that is the most rapidly growing one in the state. In the past, SWSU has kept close ties with the city, the state and with local industries. The administration continues to feel that it is in the best interest of everyone that the University be in close partnership with the entire community.

This large, comprehensive, university is attempting to become identified as a research university. Consequently, the administration has focussed on raising admissions standards of students and concentrating on the research and publication status of professors for tenure, promotion, and merit pay awards. The administration is achieving success in this effort, and fully expects to being reclassified as a Research I University within the decade.

Many prominent representatives of the Hispanic, black, Asian, and native American communities have become increasingly concerned about the quality of teaching at the University, as well as the recruitment and retention of minority faculty, staff, and students. The President, in response to such concerns, brought in a consultant to use the alternative futures planning model focussing on the affirmative action program. In particular, the consultant was charged with working with the Office of Institutional Research (OIR) to:

1. Develop an environmental scan and forecast of critical trends and events that define the context within which the recruitment and retention of minority faculty, staff and students will take place.

2. Develop a set of scenarios depicting possible alternative futures within which the University's affirmative action may function.

3. Develop effective affirmative action plans and policies in light of this assessment.

4. Facilitate the further development of the skills of SWSU personnel to use the alternative futures model in other areas of institutional planning.

Preparation for Implementing the Alternative Futures Model

The first task in constructing scenarios of alternative futures facing SWSU was to review two recently completed comprehensive environmental scans focusing on the social, technological, economic, and political sectors of society at the local, state, regional, national, and international levels. This review was later supplemented first by the experiences of the consultant and the OIR staff, and then by the experience of a carefully selected Delphi panel. The focus of these reviews was to identify those trends that would form the context within which the University, and thus the affirmative action program, would function within the next decade. It highlighted those events that, if they occurred, would affect those trends or the University's affirmative action program. For example, some of the critical national trends identified in the scan were the percentage of minority group members and women with graduate degrees working outside of higher education, the competitiveness of salaries in colleges and universities as compared with other employment opportunities, and the percentage of minority high school graduates who are computer literate. Some of the critical trends included the legislature's projected support for open door access for minorities to the state's universities, their financial support for public higher education, and the median resale value of homes in the county. Panelists were also asked to estimate the probability of selected critical events and their impact on the SWSU affirmative action program if they occurred. Such potential events included public schools expanding the school year from 35 to 48 weeks, migration patterns shifting away from sun-belt cities, gang activity reaching the 1988 Los Angeles level, and the availability of a medicine that enhances human memory. Some 54 trends and 43 events were put in the form of a round one (R1) Delphi questionnaire.

The second task was to identify those individuals on the SWSU campus who were both prominent in the institution and who had responsibility in various components of the affirmative action program. The consultant wanted to include them in the Delphi panel as a way of not only assisting in developing the scenarios, but because the process would facilitate consensus building vis-a-vis desired plans and policies for the affirmative action program. The President appointed some 80 panel members, and in a cover letter explained the purpose of the study, and included a copy of the Delphi questionnaire, an environmental scan (*What Lies Ahead* [United Way, 1987]) and a monograph, *Futures Research and the Strategic Planning Process* [Morrison, Renfro, and Boucher, 1984]) that provided an overview of the perspective to be used in the alternative futures study.

Round One (R1) Delphi Questionnaire

The questionnaire sent with the President's letter contained the trend and event set obtained from the review of environmental scans and the experience of the OIR staff. The purpose of this questionnaire was to ask the panel to:

- forecast the level of trends and the probabilities of events in the set
- assess the impact of each trend and event on the affirmative action program
- identify what factors would affect the levels of those trends they thought most critical
- nominate additional trends and events.

Consistent with the intent of the alternative futures model, the consultant wanted to develop an institutional view of the "most likely" future and stimulate an increased alertness on the part of University decision-makers to identify discontinuities in the external world that may affect the institution. He recommended a more detailed R1 Delphi questionnaire because it would be several months before the alternative futures team could meet with the larger Delphi panel (it was distributed during the summer and not during a regular semester).

The consultant recommended the indexing method of judgmental forecasting where the present level of the trend is assumed to be 100; respondents estimated the "most likely" level of the trend five years from now and ten years from now, with the awareness that a trend's level can increase, decrease, or remain stable from one point to the next. For example, for a trend, "The percent of states with an elected woman governor," a response of 125 for the five year forecast and 110 for the 10 year forecast would be interpreted as a 25% increase in five years with a drop during the next five years, but still 10% higher in 1998 than in 1988. The consultant recommended this method because the central interest was in panelists' view of the general direction of trends; he told the team leader that if it became important to tie trends to "real numbers," one could, and probably would, when writing scenarios.

For events, panel respondents forecasted the probability of each event occurring five years from 1988 and 10 years from 1988. A "0" indicated no likelihood of the event occurring, and "100" meant that the event is certain to occur. Of course, some events can occur at any time but

other events cannot occur until some given time in the future (a natural disaster versus a change in elected officials). Panelists were asked to estimate the number of years until the event first becomes possible. For example, for a potential event, "A major accident occurs at the Palo Verde nuclear plant," a response of "5" for 1993, of "10" for 1998, and "0" for "first year," is interpreted as having a 5% probability of occurring within the next five years and a 10% probability of occurring in the next ten years. For the potential event, "The U.S. elects a minority president," a response of "10" for 1993, of "25" for 1998, and a "4" for "first year," is interpreted as a 10% chance in 1993 (the questionnaire was distributed in October, 1988), and a 25% probability in 1998, but the event has no possibility of occurring until four years from 1988.

Round Two (R2) Delphi Conference

The OIR staff analyzed the questionnaires and prepared the results for discussion by panel participants in a conference (as opposed to mailed questionnaire) setting. The purpose of the conference was to allow the Delphi panel to review the results of the R1 questionnaire by exploring the extent to which they agreed with the R1 median forecasts, identifying the factors that could affect the trend levels or the probabilities of events, and reforecasting trends and events after having the benefit of discussion. Given that the workshop was limited to a four-hour time period, the consultant divided participants into small groups. Carefully selected group members represented ethnic, gender, and position balance, in order to achieve the greatest heterogeneity possible for each group. (This enhanced the possibility to examine and to hear all points of view during the discussion.) A group leader led the discussion over a subset of the total set of trends and events. Group leaders appointed recorders to capture critical points of the discussion. In addition, all participants were asked to forecast those trends and events nominated from the R1 Delphi. Finally, the consultant asked participants to evaluate the workshop, including what questions or concerns they had about the project.

The OIR staff sent participants a summary of the workshop evaluation in a newsletter. Reaction to the workshop (R2) was generally favorable. Participants felt that the workshop provided an opportunity to exchange ideas and points of view, saying, "It was interesting to see how people can finally see the complexity of this issue." In addition, participants said they found the process "innovative and thought provoking" and the use of time "effective."

However, many respondents felt that the overview of the project was insufficient, that there was not enough time to accomplish the tasks requested of them in the workshop, and that there was insufficient time for groups to report the results of their deliberations. Some wanted to know the criteria for selecting participants. Not surprisingly, many participants also were frustrated with the "ambiguity" of a process that looks toward the future. Finally, many participants raised a number of questions about the process and what would happen next in the project.

The newsletter responded to these comments by describing the project, including the next step, sending out an R3 questionnaire.

Implementation of Round Three (R3)

The next questionnaire, R3, contained those trends and events for which the R2 forecasts by the small groups in the conference were out of the interquartile range of the R1 forecasts (N = 20, or 21% of the total number of trends and events in the set). Graphs of these forecasts that included the R1 and R2 estimates plus the recorders comments of the factors influencing the trend or event were mailed to all panelists with a request for a reforecast. Figures 2 and 3 illustrate the result of this process. In Round One, the entire panel's median estimate of the probability of Congress phasing out education benefit programs for veterans (E31) was 5% by year end 1993 and 10% by year end 1998, with the probability first exceeding zero in 1992. The Round Two median reestimation of this event was that this event would have a 20% probability by year end 1993 and a 45% probability by year end 1998. Factors behind the increase in probability were that Federal spending for the military will decrease, thereby reducing benefits levels, that there is less support for veterans benefits as evidenced by the recent refusal to create a cabinet level "Veterans Administration," that veterans are becoming more of a minority and that most people do not see veterans' benefits as personally for them. These factors were more important in increasing the probability of phasing out education benefits than the impact of the military working for the benefits. When in Round Three the graph was sent to the entire panel with the median forecasts of R1 and R2 (with an explanation behind the reforecast), the panel reestimated the probability of this event occurring by year end 1993 as 10%, and by year end 1998 as 20%.

In estimating the percentage increase in the level of child-care benefits at work from the base year end 1989, the median forecast of the entire panel in R1 was that level of benefits would increase 10% by year end 1993 and an additional 8% by year end 1998. The R2 estimate by the workshop subgroup was that the child care benefits would increase 20% by year end 1993 and an additional 30% by year end 1998. Their reasoning was that there was much

interest in this issue not only for low income working women, but also to women (and men) professionals. When the graph was sent to the entire panel with the median forecasts of R1 and R2 (with an explanation of the reforecast), the entire panel estimated that the benefits level would increase 13% by year end 1993 and increase an additional 10% by year end 1998 (see Figure 3).

In addition, the R3 questionnaire included nominated

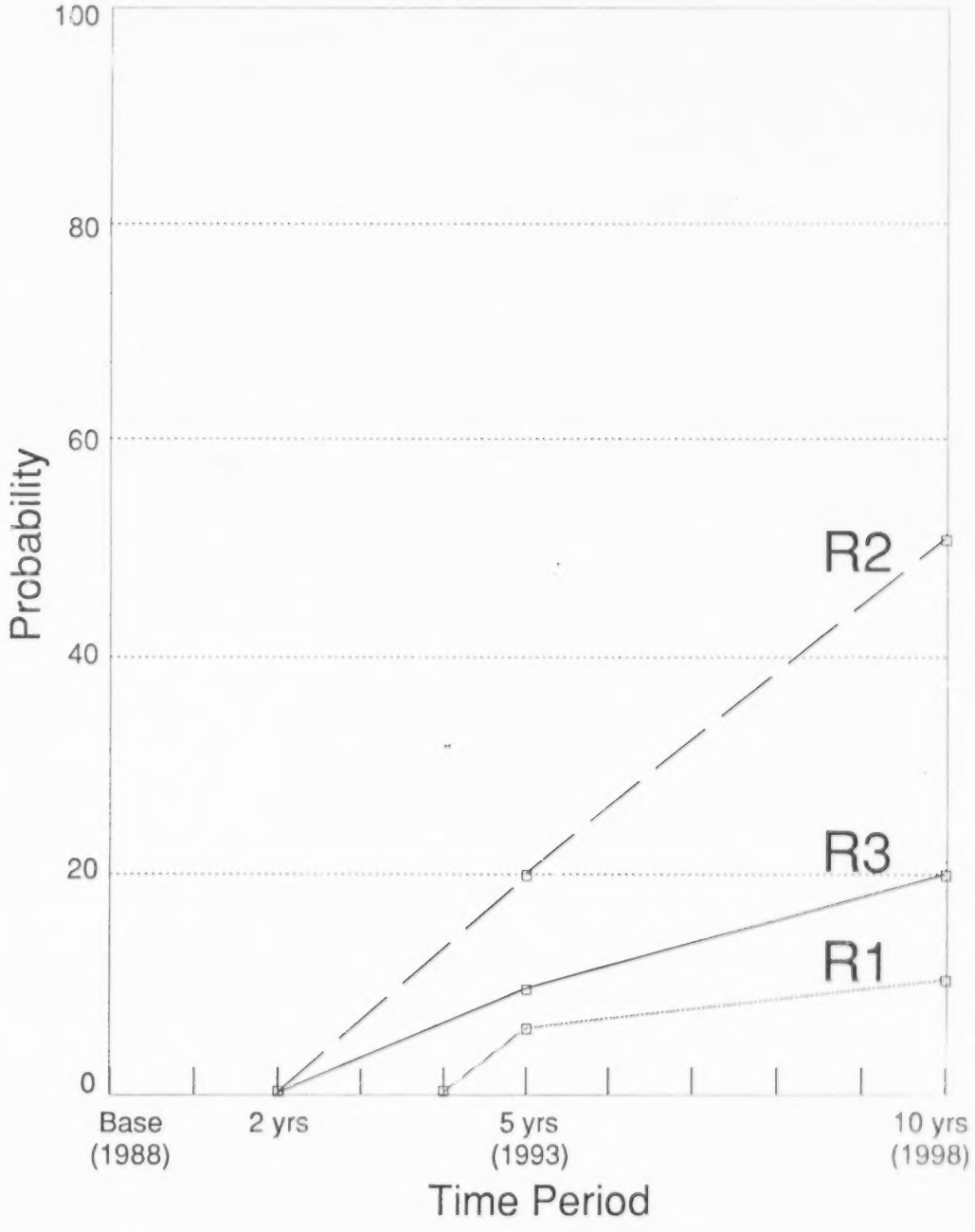

Figure 2. COMPARISON OF R1 - R3 PROBABILITY ESTIMATES FOR PHASING OUT ED BENEFITS FOR VETERANS (E31)

trends and events from R1 because the response rate for forecasting these trends and events was low in R2 (N=5). There was not sufficient time to ask the conference participants to forecast these trends and events in the conference itself; therefore, they were asked to send their forecasts to the OIR after the conference.

Developing the Cross-Impact Matrix

The SWSU alternative futures team used a cross-matrix form designed for the *Bravo!* scenario generator following the logic of cross-impact analysis (i.e., define as explicitly as possible the pair-wise interconnections within a set of forecasted trends and events). All median R3 trend and event estimates served as input into *BRAVO!*. This file captured the trend level and event probability histories computed during *BRAVO!*'s iterations.

The alternative futures team specified the matrix, which, for the *Bravo!* program, called for estimations of the direction and strength of the impacting event on the impacted trend or event. For each impacted event the direc-

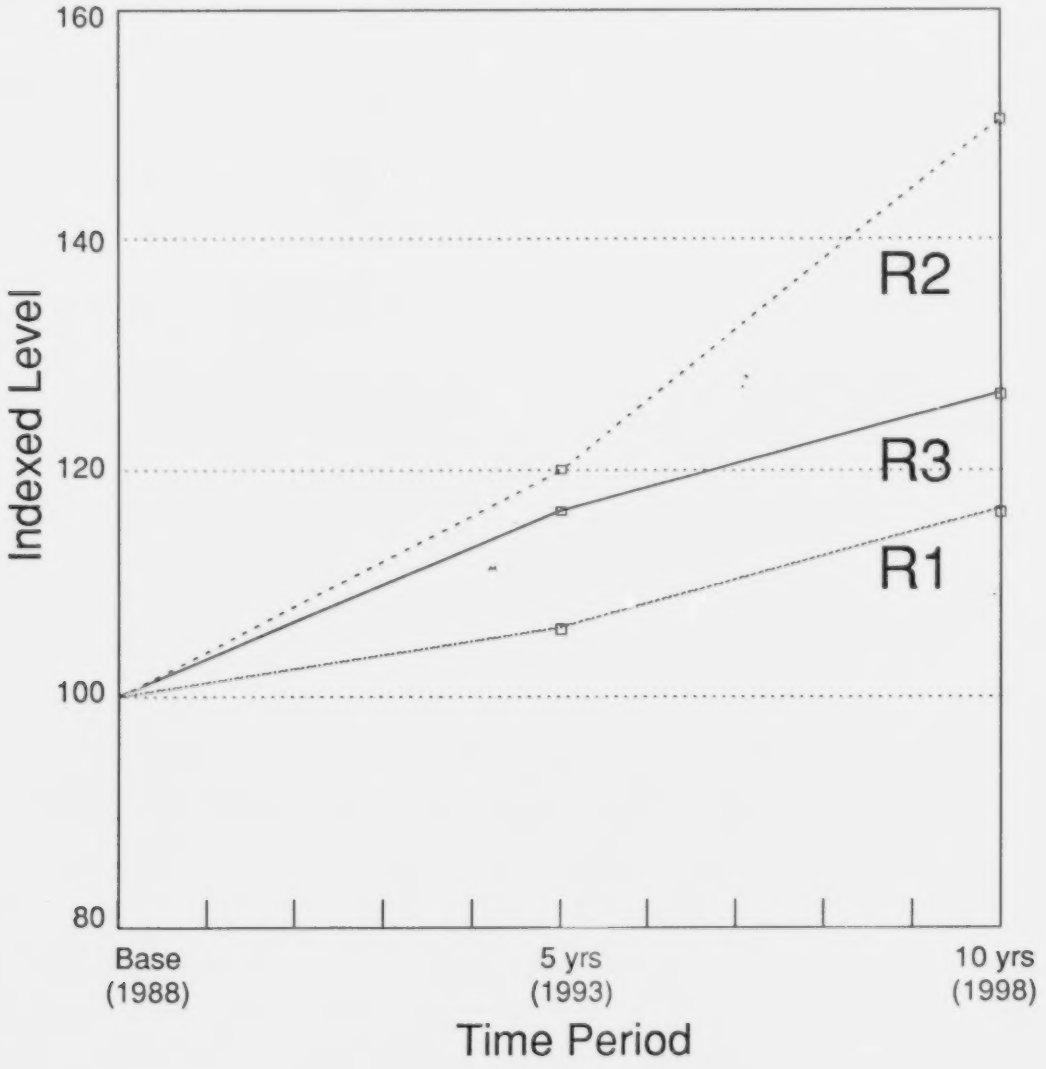

Figure 3. COMPARISON OF R1 - R3 ESTIMATES FOR LEVEL OF CHILD-CARE BENEFITS AT WORK (T47)

tion and strength of the cross-impacts were expressed as either positive or negative based on a six point scale. That is, for events on events, the team estimated for the planning period (10 years) the impact that the impacting event would have on the probability of occurrence of the impacted event during each year of the period. For example, as noted in Figure 4, Event 31, "Congress phases out educational benefit programs for veterans," is impacted by Events 2 (major depression), 9 (balanced budget amendment passed), and 34 (regional conflict involving American troops). However, the impacts are very different. Event 2 makes Event 31 immediately "much more likely," decreasing to the original R3 estimate by year eight. Event 9 (balanced budget) makes Event 31 "somewhat more likely" in year one. Event 34 (regional conflict) makes Event 31 somewhat less likely immediately, and much less likely in year 2.

BRAVO! takes this information from the cross-impact matrix and computes revised probabilities based on the summation of the cross-impacts of the events impacting events. Because of the interrelationships of the variables, the R3 estimates can change significantly. For example, in Figure 5, Event 31 ("Congress phases out educational benefit programs for veterans"), the "Expected Future" (*BRAVO!* estimate) is very different from the R3 estimate coming out of the DELPHI process.

In a similar process, the team specified the interaction of events on trends (see Figure 6). In this example, Trend 47, "Availability of child-care as a benefit at places of work in Metrocity County," is impacted by Events 2 (major depression), 9 (balanced budget amendment), and 34 (regional conflict). Again the nature of the impacts is different. For example, Events 2 and 9 have a negative 5% impact on Trend 47 in the first year. However, Event 9 continues to decrease the availability of child care benefits 10% in the second year and 15% in the third, a decrease that has an effect to year 9. Event 34, a regional conflict involving American troops, serves to increase the availability of child care (2% in year one increasing to 10% in year 4 before losing its effect in year six.

The total impact of these events on Trend 25 is seen in Figure 7. In this case, the cross-impacts (Expected Future) were lower than the R3 median estimate throughout the ten

Impacting Events: year since occurrence	0	1	2	3	4	5	6	7	8	9	10
Major Depression (E2)	2		1						0		
Balanced Budget Amendment (E9)		3									
Regional Conflict (E34)	4		5								

Event-on-Event Cross Impact Scale:
1=Virtually certain, 2=Much more likely, 3=Somewhat more likely,
4=Somewhat less likely, 5=Much less likely,
6=Virtually impossible, 0=Return to base line

Figure 4. EXAMPLE OF EVENT-ON-EVENT CROSS IMPACT ESTIMATIONS
Impacted Event: *Congress phases out educational benefit programs for veterans (E31)*

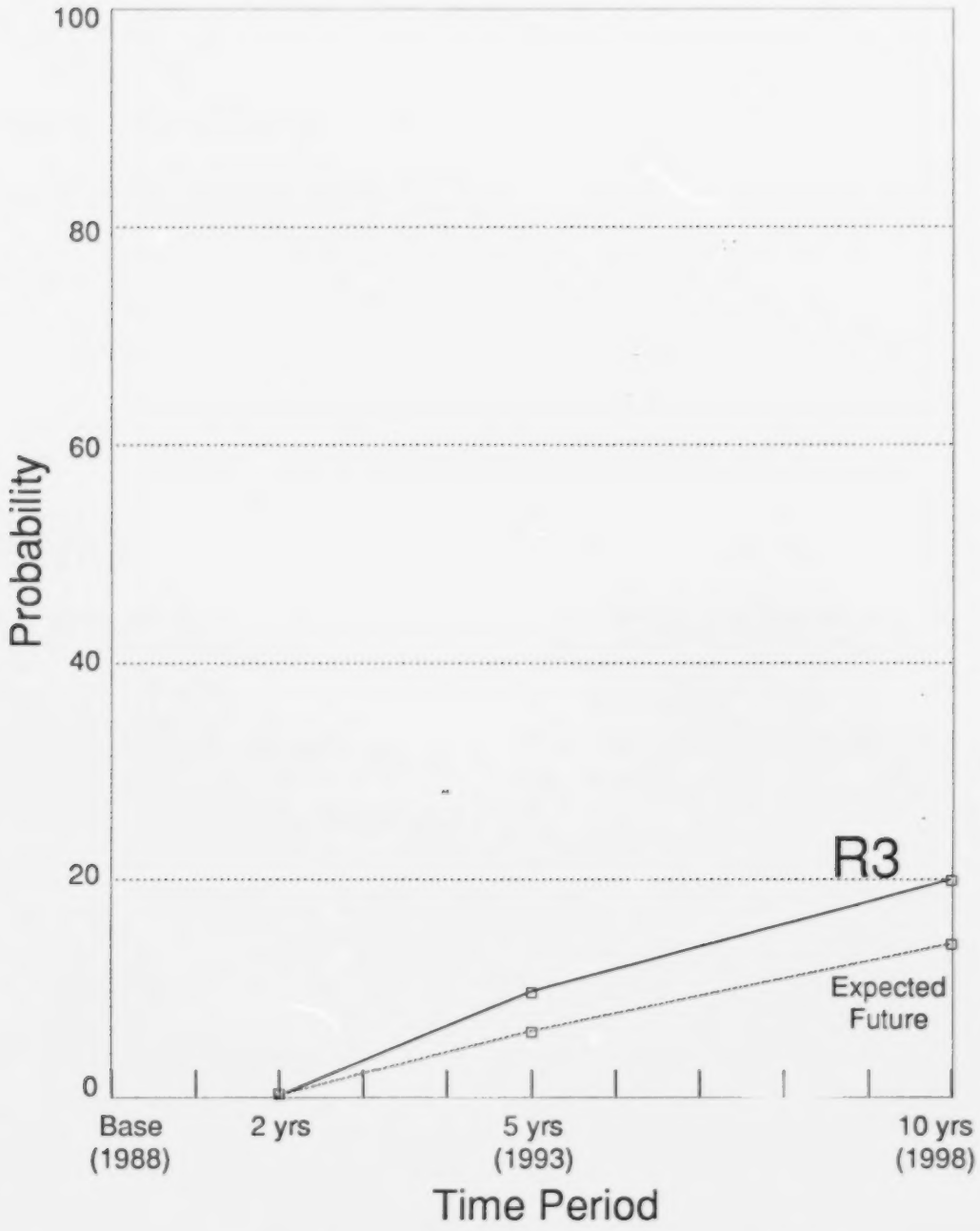

Figure 5. COMPARISON OF EXPECTED FUTURE WITH MEDIAN R3 PROBABILITY ESTIMATES FOR PHASING OUT ED BENEFITS FOR VETERANS (E31)

Impacting Events	year since occurrence	0	1	2	3	4	5	6	7	8	9	10
	Major Depression (E2)		-5	0								
	Balanced Budget Amendment (E9)		-5	-10	-15						0	
	Regional Conflict (E34)		+2			+10		0				

Note: numbers are in percent

Figure 6. EXAMPLE OF EVENT-ON-TREND CROSS IMPACT ESTIMATIONS
Impacted Event: *Availability of child-care as a benefit at places of work in Metrocity County (T47)*

year period. The "expected future" of the increase or decrease from the year end 1988 level reflects the effect of impacting events that have over an 80% probability of occurrence during the coming decade. This level is lower than the R3 Delphi estimate made without systematic attention to the effects of likely events.

Developing Alternative Scenarios

The information coming out of *BRAVO!* was useful in developing alternative scenarios by specifying probability levels that trigger events to occur. For example, in the first alternative to the expected or "most likely future," the team specified that any event reaching a probability of .8 would occur. *BRAVO!* then assumes the probability of any event at .8 or higher to be 1.0 and recomputes the cross-impact matrix, which, in turn, changes the probabilities of those events affected by the events that had a .8 or higher probabilities and, correspondingly, all trend levels affected by those events occurring. We called this scenario the "Stable Future." A "Turbulent" future was created by specifying that events occur when they reach .6; a "Chaotic" future was created by specifying that events occur when they reach .35.

After running *Bravo!* to generate the three scenarios, the team produced figures indicating the different trend levels under each scenario. For example, the amount of child care benefits at work in Metrocity different in each of the scenarios as a consequence of different events occurring within each scenario and, correspondingly, as a consequence of the indirect effects of these occurrences on the trend. (See Figure 8.) After producing such figures for each trend in the set, the team grouped the trends into categories and began to lay them out in a sequence that "made sense" to them. They also sorted figures depicting the final median estimates of event probabilities into the same categories. Team members, all of whom had participated in developing the cross-impact matrix, used this experience in conjunction with the visual display of trend and event data produced by *BRAVO!* to identify the key driving events in the set. With this perspective, individual team members drafted a scenario describing the trend levels and the key events that drove these levels. (See Figure 9.) The entire team then reviewed the drafts and produced scenarios describing the "stable future," the "turbulent future" and the "chaotic future."

The Stable Future

In the Stable Scenario, there was no broadly based catastrophic event abruptly altering the course of the decade. However, during this time two sets of events in the external environment had particular impact on SWSU's funding environment—a rise in the number of youth gangs and shrinking federal and corporate student financial aid. The

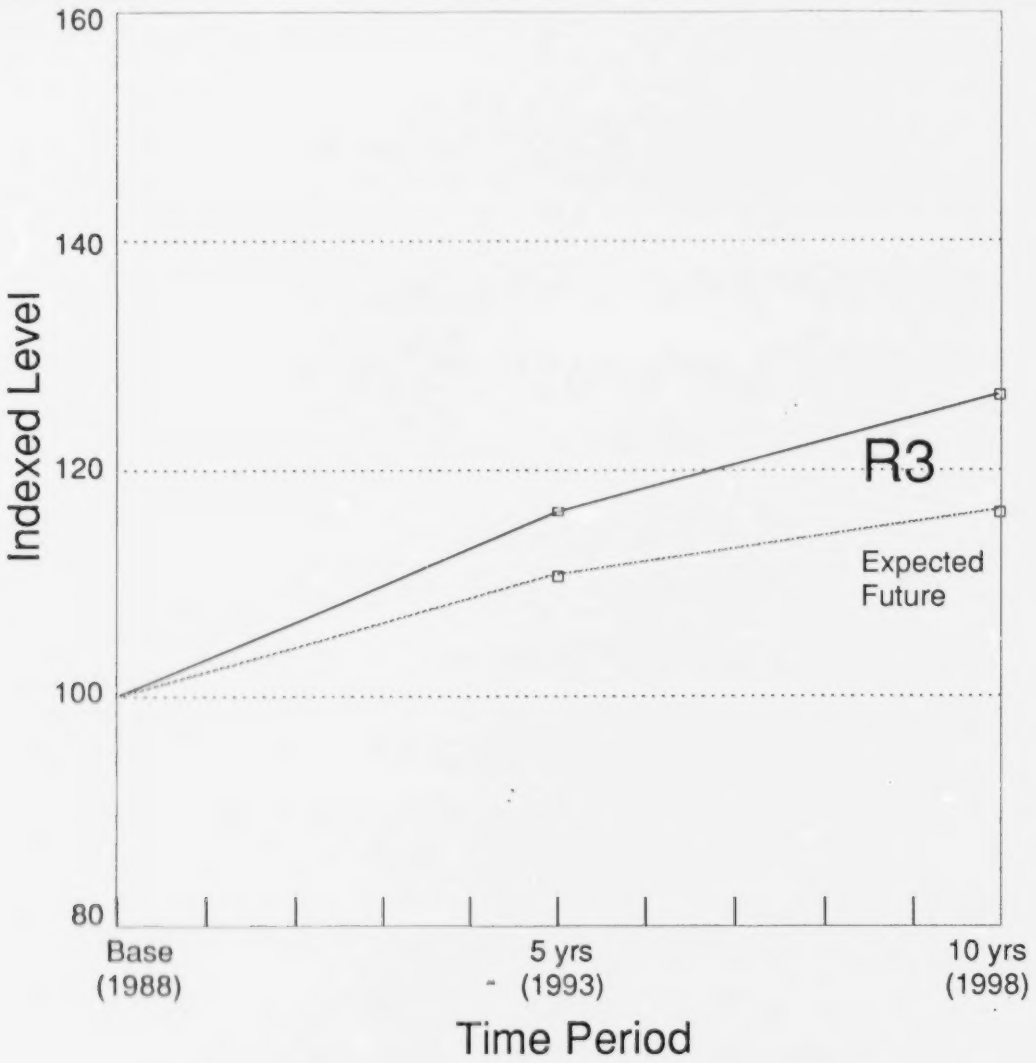

Figure 7. COMPARISON OF EXPECTED FUTURE WITH MEDIAN R3 ESTIMATES FOR LEVEL OF CHILD-CARE BENEFITS AT WORK (T47)

latter, coupled with a rising cost in tuition, created a substantial increase in the gap between the met and unmet financial needs of many potential students. While the percentage of minority students enrolling in community colleges increased, only a small portion of these students transferred to the universities to complete their undergraduate education. For a sizable share of the potential minority student pool, however, higher education moved further out of reach. A summary of this scenario is found in Figure 10.

In this environment, the affirmative action hiring tasks became even more complex. While the availability of minority and women faculty improved nationally, the competitiveness of salaries in colleges and universities fell, thus making it increasingly difficult to employ members of this pool in higher education.

The Turbulent Future

In the Turbulent Scenario (see Figure 11) economic depression was the dominant theme of the decade. One effect of the depression was the significant rise in demand for public-funded human services. The state legislature responded to the problem of increased demand and lower

revenues by focusing on accountability and increasingly intervening in the operations of state agencies. In higher education, this trend toward accountability and legislative intervention was seen early in the decade when the legislature mandated a course-by-course articulation and transfer system between the community colleges and the state's three universities. Legislative intervention was felt again in 1998 when a bill was signed into law tying educational funding to specific outcome measures from K-12 through postsecondary education.

The Chaotic Future

In the Chaotic Scenario (see Figure 12), an economic depression occurred that was so deep and complex that even war could not cure it. Starting in 1994, the depression raged through the rest of the decade, fueled by regional conflicts involving U.S. troops in both the Middle East and Central/South America. Both had wide ranging effects on the U.S. economy.

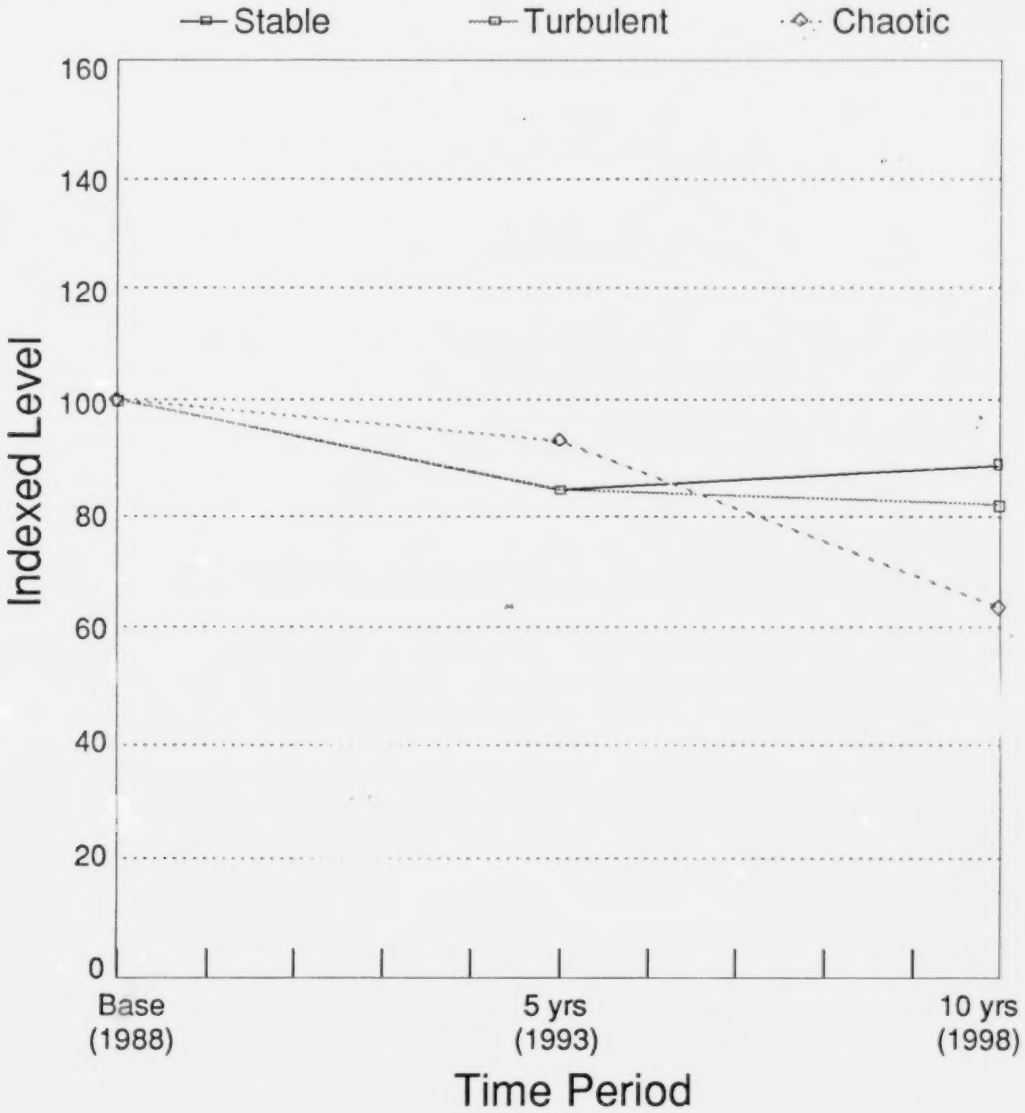

Figure 8. COMPARISON OF ALTERNATIVE SCENARIOS FOR CHILD-CARE BENEFITS AT WORK (T47)

Event #	Description of the Event
E 2	A major depression occurs
E 8	The State Legislature passes legislation tying funding increases in education to educational outcomes.
E 10	An effective morning-after birth control pill is available to teenage girls.
E 12	The retirement age for Social Security benefits is raised to age 70.
E 13	A medication is developed that can increase memory recall.
E 14	The federal government requires that students achieve minimum academic standards in high school to be eligible for federal financial aid in college.
E 15	The State Board of Regents hires a Hispanic president for one of state's universities.
E 17	Gang activity in local community rises to the 1988 level in larger cities.
E 18	Penalties for drug trafficking are made more severe.
E 22	A major financial collapse causes Brazil or Mexico to default on loans to U.S. banks.
E 24	Another communist regime takes over in Central America.
E 25	A fossil fuel crisis of at least 1973-74 proportions hits the U.S.
E 32	All non-military federal government student financial aid funds arecut by at least 50%.
E 34	A major regional conflict (e.g., Middle East) involving U.S. troops erupts.
E 35	The U.S. experiences a dramatic flood of refugees from Mexico, Central and/or South America.
E 37	The State passes legislation requiring course-by-course articulation and transfer from two-year to four-year colleges.
E 39	SWU establishes a second branch campus.
E 42	Enrollment caps are implemented in the State university system.
E 61	Local county community colleges upgrade their requirements for student performance.

Figure 9. Driving Events

This report surveys the history of developments affecting SWSU and its affirmative action efforts over the decade of the 1930s. The report chronicles the interplay of broad external forces, as well as the more specific socioeconomic, economic and demographic factors shaping the environment for SWSU's recruitment and retention of racial/ethnic minority and female students, faculty, and staff. The tone of these years was one of relative stability, with no broadly based catastrophic event abruptly altering the course of the decade.

However, during this time several events did occur that impacted on SWSU's funding and decision-making environment.

Two sets of events in the external environment had particular impact on SWSU's funding environment. Early in the decade, local attention was riveted on the growing problem of youth gangs. Increasing phenomenally during the first half of the decade, gang activity in the local metro area reached a 1996 level comparable to that reached by other major cities in 1988-89. As gangs and the number of youths involved multiplied, the threat to public safety and the quality of life was felt throughout the local community. During the same period, penalties for drug trafficking increased throughout the country. The local impact of these events was an escalation in the level of law enforcement efforts and related costs. Law enforcement personnel, court expansion, and the crisis in the state's prison system all vied with higher education for their share of limited public dollars.

The second set of events related more directly to higher education and SWSU. In the environment of shrinking federal and corporate student financial aid, the federal government in 1997 established new federal financial aid eligibility requirements based on a set of minimum high school academic achievement standards. The immediate result was a prolonged and heated debate over the racial bias of these requirements.

Despite the restrictions in federal and corporate financial aid, SWSU's enrollments continued to rise during the first half of the decade, focusing local discussion on the issues of a second branch campus, new structural relationships with the community colleges, and enrollment caps. Finally, in 1997 the university took a dramatic step, capping enrollment on the main campus and stepping up planning for a second branch campus.

Figure 10. Stable Future Scenario

Implications from External Analysis

In early Spring, 1989, the consultant conducted a three-hour workshop of some 20 Delphi participants who where charged first with reviewing the scenarios according to the criteria cited earlier (i.e., clarity, credibility, plausibility, relevance, urgency, comparative advantage, and technical quality) and second, to develop the policy implications for the affirmative action program.

The workshop began with a critique of the scenarios. The major critique was that all three scenarios depicted varying degrees of a world going from bad to worse. This was because the alternative futures team did not include many "positive" events in the event set. Given this criticism, the panel proceeded to develop the following policy options for consideration by the SWSU administration.

1. In order to meet the projected decrease in private funding, encourage Corporate/University partnerships. The "pitch" to the corporate world should state that affirmative action is not only one of equity and social justice, but also is at the heart of economic and political viability of the state. It is imperative to educate this sizable, currently underutilized segment of the population. Moreover, by assisting the SWSU affirmative action program directly, the partnership can enrich the pool of minority and women candidates from which the corporate world can recruit for professional positions. Therefore, it is in the best interest of the state's corporations and businesses to become partners with SWSU and to support the SWSU affirmative action program. This could take the form of (a) encouraging their minority and women full-time professionals to work as part-time SWSU faculty members, (b) sponsoring team-taught courses (SWSU professor/corporate professional) in both the corporate and the University settings, (c) developing work-study arrangements for minority and women students, and (d) funding programs designed to encourage minorities to continue their education past high school.

Economic depression was the dominant theme of the decade. Starting in 1994, the depression had wide-ranging impact lasting throughout the rest of the decade. Throughout the nation and the world, the balance was upset, forcing dramatic changes in operations, relationships, and policies at all levels.

One effect of the depression was the dominant demand for public-funded human services. In the state, one sector experiencing a substantial increase in demand was the state's law enforcement and courts systems. Early in the decade, local attention was on the growth of youth gangs. Increasing phenomenally during the first half of the decade, gang activity in the area reached a 1996 level comparable to that of the larger cities in 1988-1989. During the same period, penalties for drug traficking increased throughout the country. The local impact of these problems was an escalation in the level of law enforcement efforts and related costs. However, law enforcement was only one of the many sectors increasingly competing for its share of declining state revenues.

The state legislature responded to the problem of increased demand and lower revenues by focusing on accountability and increasingly intervening in the operations of state agencies. In higher education, this trend toward accountability and legislative intervention was seen early in the decade when the legislature mandated a course-by-course articulation and transfer between the community colleges and the state's three universities. Legislative intervention was felt again in 1998 when a bill was signed into law tying educational funding to specific outcome measures for K-12 through postsecondary education.

The state's response was not unique. Nationwide, demands for increased accountability, educational outcomes, and raised academic achievement standards were major educational policy issues throughout the decade. Early in 1995, in an environment of dwindling federal and corporate student financial aid, the federal government radically altered its financial aid requirements, tying student eligibility to a defined set of minimum academic standards nationwide. As the decade closes, debate continues on the issues of the impact of financial aid cuts on minority student access and the racial bias of new eligibility requirements.

Against this backdrop, SWSU continued its enrollment growth pattern. In 1994, however, the university responded to a 10 % cut by setting main campus enrollment caps. However, four years later, in response to pressure from unemployed potential students and a business community seeking economic recovery, the legislature approved funding for a second branch campus.

Figure 11. The Turbulent Future Summary

2. In order to meet a projected decline in available minority and women faculty and staff, the size of the"pipeline" could be enhanced by the following activities:

a. Encourage the Alumni Office to enlist the aid of successful minority and women alumni to serve as active role models for students, and to serve as recruiters for faculty, staff, and students.

b. Institutionalize informal networks by requesting that departmental faculty create lists of prominent women and minority faculty members across the country who could be phoned to locate talented minority and women PhDs for specific positions. The individuals so contacted, their positions, their recommendations, and their phone numbers, would be included as part of the reporting requirements of position searches.

c. Increase incentives for the recruitment and retention of minority and women faculty, staff, and students. For individuals, this would be part of a general reward system including such things as increased fringe benefits and merit pay, additional holidays, providing free (and good) tickets to University-sponsored cultural and athletic events, and reducing work load assignments. For departments, this would require developing a reward system based upon a formula of the percentage of entering students who were recruited and who graduated.

d. Adopt a mentoring, "SWSU Grows Its Own" program.

• Establish an SWSU scholars program, whereby high achieving minority elementary through high school students would be designated Future SWSU Scholars. SWSU "buddies" (successful SWSU students compensated or volunteering to serve as role models) would work throughout the year with each Future Scholar. The University would invite the student to on-campus summer enrichment sessions. The objective, of course, would be to encourage high-achieving minorities and women to enroll at SWSU.

• Establish a paid apprenticeship program for selected minority and women undergraduate and graduate students, whereby they would be assigned to work with, and assist, selected professors during the course of their studies. In return for this assistance, the professors would agree to mentor these assistants through the course of their degree program.

• Ignore the prevailing norm of "not hiring your own" by employing outstanding minority and women graduates from SWSU.

• Identify promising minority and women ABDs from other institutions, offer generous stipends for them while they complete their degrees, with the understanding that they will seek employment at SWSU upon the completion of their degrees, or that they will repay the stipend if they are tendered employment at SWSU but choose not to accept it.

• For minority and women assistant professors, establish a policy of reduced teaching or committee assignments the first three years, to enhance their chances for tenure. For those who marry, offer "split job" assignments whereby the married couple split one job assignment until another position becomes available.

• Develop a "research seed money account" for newly appointed minority or women assistant professors.

3. In anticipation of a decrease in federally funded financial aid, SWSU should:

a. Consider awarding a "tuition certificate" to elementary, junior high and high school students designated as SWSU scholars.

b. Change the University calendar to accommodate part-time working students by incorporating shorter terms, evening and weekend classes.

c. Encourage corporate and alumni sponsorship of work-study programs, as well as financial aid packages for deserving minority youth and women.

4. In anticipation of an increased probability that the greater metro-area will experience a rise in youth-gang activity comparable to that currently on-going in larger cities, devise a program to work with and through youth gangs to keep more youth in school. This could include (a) working directly with gang leadership to achieve this objective and (b) design research programs to explore the effects of intervention strategies designed to change the norms of youth gangs, prison populations, and public school peer-group cultures in a way that would enhance the probability of success in the academic culture.

5. In anticipation of an expanding social role for the University vis-a-vis more highly educated refugees and immigrants fleeing conflict in South and Central America, SWSU should consider now (a) experimenting with teaching selected (non-language) courses in the Spanish language and (b) developing undergraduate and short courses that emphasize language training and cultural diversity for Anglo students, faculty, and staff.

Implications of the Alternative Futures Planning Model for Offices of Institutional Research

As should now be evident, implementing the alternative futures approach to planning will require institutional research professionals to add to their bag of skills and techniques—environmental scanning, Delphi, cross-impact analysis, scenario writing, and assisting institutional decision-makers to use scenarios to develop creative and effective plans for the future.

The environmental scan used by the OIR office at SWSU was a relatively simple one. They used a scan conducted by another organization, and added to it by local scans and by using the United Way publication, *What Lies Ahead.* The scan was completed for the first iteration of their planning cycle by asking their Delphi respondents for additional trends and events that, based on their experience, were relevant to the issue of affirmative action.

Other institutions have developed comprehensive, systematic, and on-going environmental scanning systems (Morrison, 1987; Simpson, McGinty, and Morrison, 1987). Developing such a system requires the completion of a number of tasks:

1. Identify information resources spanning the social, technological, economic, and political sectors from the regional, national, and international arenas.

2. Assign scanners specific information resources.

3. Train scanners in scanning and abstracting.

4. Develop a "hard copy" and electronic data base accessible to colleagues within the institution.

5. Develop techniques of using electronic data bases to prepare periodic environmental scanning notebooks.

6. Conduct meetings assessing the value of abstracts produced during the past quarter.

Constructing Delphi questionnaires should not be a difficult task to learn, as the written Delphi instrument is produced much in the same way as any questionnaire and requires the same criteria for good questionnaire items (e.g., each item should be brief,clearly stated, and contain only one idea.) However, institutional researchers may not be accustomed to writing trend and event statements. They are referred to authors who have specifically addressed the task of Delphi construction (Salanick, Wenger, and Helfer, 1971; Mitchell and Tydeman, 1978; Martino, 1983; and Morrison and Mecca , 1988).

Of course, constructing the questionnaires, cross-impact matrices, running the computer programs, and writing scenarios are skills that are similar to the ones institutional researchers already have; but most researchers will need to have some training and experience to gain sufficient competency in these methods and techniques to assist institutional leaders plan for the future. Such training can be conduced "in-house" by employing a consultant to work as a mentor to staff members as they implement a study for, perhaps, one unit of the institution. Or, staff members can attend workshops/seminars and other professional development opportunities sponsored by professional associations.

Conclusions

The purpose of the alternative futures approach to planning is to provide college and university administrators information that can facilitate better decision-making, particularly in making decisions affecting the long-range future of their institutions. Given that we live in an age of "future shock," when changes in the external environment occur with ever-increasing rapidity, educational leaders are faced with a future that most assuredly will be different from the present.

This paper has reviewed the salient literature describing a basic approach used to manage this uncertainty—identifying issues/concerns based upon experience and upon environmental scanning, structuring issues in the form of trends and events, forecasting the "most likely" future of these trends and events, assessing the interrelationships of these trends and events through cross-impact analysis, and producing alternative scenarios of plausible futures that stimulate the development of viable and robust strategic options that can be incorporated in specific institutional plans. This approach varies from a traditional long-range planning approach based upon a single set of environmental assumptions about the future in recognizing that, although the future is a continuation of existing trends, it is subject to modification by events that have some probability of occurrence. Indeed, environmental uncertainty is caused by potential events. We cannot predict the future, because uncertainty is a product of our incomplete understanding of trends, potential events and their interrelationships. However, by using the best available information we have, we can anticipate plausible alternative futures and, thereby, limit the number of unanticipated possibilities to the smallest possible set.

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